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U.S. STUDY ANALYZES SOVIET ATOM MISHAP

Urals Incident of 1957-58 Is Found to Have Required Evacuation of 30 Villages in Region

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Special to The New York Times

WASHINGTON, Feb. 13 — A Government study done by scientists at the Oak Ridge National Laboratory in Tennessee has concluded that a Soviet nuclear accident in the winter of 1957-58 contaminated an area that may have been as large as several hundred square miles and probably forced the evacuation of residents of about 30 villages.

The study said the accident prompted the Soviet Union to construct a system of dams and canals in an attempt to reduce the spread of contaminated water.

The study was obtained by Critical Mass, an antinuclear group started by Ralph Nader, the consumer advocate, and was made public today by the group. Mr. Nader said in a statement that the information put together on the Soviet accident could have a bearing on the location of future nuclear installations.

The incident has long been publicized by two Soviet émigré scientists, Zhores A. Medvedev and Leo Tumerman.

First Report by Medvedev in 1976

Mr. Medvedev first reported the accident, which occurred near Kasli in Chelyabinsk Province of the Urals, in two articles published in the weekly New Scientist of London in 1976 and 1977.

After having analyzed Central Intelligence Agency material made public under a Freedom of Information request, he wrote a book titled "Nuclear Disaster in the Urals," published last year by W. W. Norton & Company in New York. The book attributed the accident to an explosion of nuclear wastes stored underground.

The 79-page Oak Ridge study was completed in December by J. R. Trabalka, L. D. Eyman and S. I. Auerbach, all members of the Environmental Sciences Division of the Oak Ridge facility. They made an independent analysis of Dr. Medvedev's original information, the C.I.A. documents and Soviet publications.

In an introduction, they say that "we originally believed that Medvedev could have reached completely incorrect conclusions about both the source and the extent of the contamination zone in Chelyabinsk Province because of his unfamiliarity with radio-ecology and nuclear technology."

Strontium 90 Was Released

The scientists added that, once they had seen the data released by the C.I.A. in November 1977, they decided that Dr. Medvedev was describing "an actual historical nuclear incident."

The study said the accident had involved a release of strontium 90 and other radioactive elements through a chemical explosion in tanks containing radioactive wastes from a nuclear weapons program.

"The scope of the incident, in human terms, was not well defined, but appeared to involve some loss of life (magnitude undetermined), the evacuation of the civilian population from a large area, and the appearance of a restricted, radioactive contamination zone east of Kasli," the Oak Ridge scientists said.

Dr. Thomas B. Cochran, a physicist with the Natural Resources Defense Council, a group opposed to nuclear power, said in an interview that the levels of contamination discussed by the report suggested that persons in the area around the site might have received radiation doses sufficient to double their chances of getting bone cancer and leukemia.

Detailed Maps Were Compared

The report said the conclusion about the probable abandonment of villages was based on "comparisons of high resolution maps of the area between Chelyabinsk and Sverdlovsk based on materials before (1936-54) and after the accident (1973-1974)," indicating the deletion of over 30 names of small communities.

The report said the maps showed the addition of several dams and canals that appeared to have been "specifically designed to prevent a waterborne contaminant (such as strontium 90) from moving farther downstream in the Techa River system." The Techa is south of Kasli.

A map with the report showed an L-shaped area as being "the zone in which extensive changes in population centers and surface hydraulic features appear after the incident." The report did not say why the impact of the accident had spread in two directions.

The report said that "due to the high population density in the affected region and the reported level of strontium 90 contamination, the event probably resulted in the evacuation and/or settlement of human population from a significant area." They estimated the area as 100 to 1,000 square kilometers, or about 40 to 400 square miles.